

What is claimed is:

1. An NC machine tool having a spindle run-out diagnosing function, the NC machine tool having a spindle for rotating a tool held thereby and adapted to numerically control a relative movement between the spindle and a workpiece, the NC machine tool comprising:

deflection detecting means provided on a base within a machining area for detecting a deflection of an outer circumferential surface of a test tool attached to the spindle when the test tool is rotated about an axis thereof; and

run-out diagnosing means for conducting a diagnosis on run-out of the spindle by calculating an amount of the run-out of the spindle on the basis of the deflection detected by the deflection detecting means and comparing the calculated run-out amount with a predetermined tolerance.

2. An NC machine tool as set forth in claim 1, wherein the deflection detecting means comprises a main body having an insertion hole for receiving the test tool, and a non-contact type deflection detecting sensor fixed to the main body with a detecting portion thereof projecting in the insertion hole,

wherein the main body is fixed to the base, and the deflection of the test tool is detected by the

non-contact type deflection detecting sensor with the test tool inserted in the insertion hole of the main body.

3. An NC machine tool as set forth in claim 2, wherein the non-contact type deflection detecting sensor of the deflection detecting means includes at least two non-contact type deflection detecting sensors disposed with deflection detecting directions thereof being perpendicular to each other.

4. An NC machine tool as set forth in claim 2, wherein the non-contact type deflection detecting sensor of the deflection detecting means includes two pairs of non-contact type deflection detecting sensors disposed in a diametrically opposite relation with deflection detecting directions of one pair of non-contact type deflection detecting sensors being perpendicular to deflection detecting directions of the other pair of non-contact type deflection detecting sensors.

5. An NC machine tool as set forth in any of claims 1 to 4, wherein the run-out diagnosing means conducts a diagnosis on a static run-out observed when the spindle is rotated at a lower rotation speed and on a dynamic run-out observed when the spindle is rotated at a higher rotation speed.